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ABSTRACT

This study attempted to explore the possibility of increasing sensitivity to syntactic structure by exposing subjects representing a range of ability to a programed sentence structure module. Students in three ninth grade classes who had completed four weeks of supplementary work with "English Sentence Structure: Programed Exercises" and scored 70 percent or higher on achievement tests were tested using the "Perception of Alternate Structures Test" to determine if they would score higher than a comparable group of tenth graders who had not had instruction in the sentence structure module. Although the mean score on the structure test for the tenth graders was not higher than the ninth grade posttest mean, it was significantly higher than the ninth grade pretest mean. Thus, the results of this project affirm that sensitivity to syntactic structure can be increased by direct instruction, although the extent to which such increased sensitivity to structure can lead to improvement in reading comprehension skills is yet to be adequately demonstrated. (A background of related studies, descriptions of materials and procedures, and a brief bibliography are provided.) (See related documents CS 200 569, and CS 200 570.) (MF)

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USE OF AN INSTRUCTIONAL MODULE TO HEIGHTEN AWARENESS OF SYNTACTIC STRUCTURE

by

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The practical value of knowing grammar terms and definitions has been the subject of much conjecture and investigation, frequently resulting in negative conclusions. The value of awareness of linguistic structure, on the other hand, has often been taken for granted; and little research has been directed to the question of the extent to which sensitivity to structure can be heightened by direct instruction. This question is the central concern of the study reported here.

Background and Statement of Problem

Related Studies

A study conducted by Mellon (1969) provides evidence that a systematic program of transformational sentence-combining can increase the rate at which a student's writing becomes more highly elaborated, and thus presumably more mature. Although study of transformational grammar was a part of his experimental program, Mellon surmised that the specially structured experiencing of mature sentences, rather than the study of grammar itself, served to influence the immediate growth rate of syntactic fluency. O'Hare (1973) conducted a similar study and found that instructional materials with no emphasis on grammar study per se produced positive results of even greater magnitude than those reported by Mellon.

While it seems reasonable to suppose that heightened sensitivity to syntactic structure was an outcome of these instructional experiments, their basic concern was sentence production rather than performance on an objective test of syntactic awareness. The latter concern, however, constituted an important part of a study reported by O'Donnell and King (1971).

More specifically, the O'Donnell and King study sought answers to two questions: (1) Can children who apparently lack skill in recovering sentence deep structure be aided in developing that skill? (2) If children can be aided in developing skill in deep structure recovery, will their increase in skill be accompanied by improvement in reading comprehension? The first question was approached by means of learning exercises requiring subjects to analyze and re-synthesize sentences; that is, subjects were asked to divide syntactically complex structures into their constituent "kernels" and then to re-combine the kernels to form paraphrases of the original sentences. It was hoped that such exercises would serve to heighten subjects' awareness of underlying structure and lead to improved reading comprehension.

The following example illustrates the type of exercises employed in the study:

Sentence: It was fortunate that Sam had read the book.

Constituent Kernels:

Paraphrase:

Subjects were shown how to divide the original sentence into constituent kernels (It was fortunate and Sam had read the book) and to re-combine the constituents in a paraphrase (That Sam had read the book was fortunate or Fortunately, Sam had read the book).

A series of fifteen "lessons" based on various types of sentences lending themselves easily to syntactic paraphrase was offered to fifty seventh-graders in two schools in Tallahassee, Florida. Instruction in the experimental materials was extended over a period of approximately fifteen weeks, taking from 90 to 120 minutes of instructional time per week. The criterion instrument to measure skill in recovering underlying structure was the "Deep Structure Recovery Test" developed by Simons (1970). Since the slight gain

from pre-test to post-test could not be attributed to the influence of the instructional materials. Direction of the study shifted to explore further the influence of previously attained deep structure recovery skills on reading comprehension.

Failure to confirm expectations that deep structure recovery skills can be deliberately taught to students was thought to be accounted for by the poor morale of the subjects and their low level of academic ability (all but two of the fifty subjects were below the twentieth percentile on a standardized reading test and thirty-nine were below the tenth percentile). Consequently, the investigators recommended that simpler materials or less severely retarded subjects should be employed in future explorations of the teachability of deep structure recovery skills.

In the present study, subjects representing a wider range of ability were selected and instructional materials were presented in a different format.

Statement of Problem

The purpose of this study is to explore the possibility of increasing sensitivity to syntactic structure by exposing subjects representing a range of ability to a programmed sentence-structure module.

The major hypothesis of the study is directed to the question of whether ninth-grade students who, after completion of "English Sentence Structure: Programmed Exercises," score 70% or higher on achievement tests (the successful treatment group) will score higher on the "Perception of Alternate Structures Test" (the criterion instrument) than a comparable group of tenth-graders who have not had instruction in the sentence-structure

module (the reference group). Stated in the null form, the major hypothesis is that the post-test mean scores on the criterion instrument will not differ for the successful treatment group and the reference group.

Hypotheses concerning pre-test to post-test gains on the criterion measure for the successful treatment group and for the entire ninth-grade group were also investigated.

Description of Materials, Procedures, and Subjects

Instructional Materials

The instructional materials for the project reported here were presented in a twenty-four-page module titled "English Sentence Structure: Programmed Exercises," developed and reported by O'Donnell (1973a). These materials follow a programmed format, with correct responses provided in the left-hand margin for subjects' immediate feedback.

Section I of the module deals with basic sentence patterns and their parts, and with parts of speech. Section II emphasizes the distinction between surface structure of sentences and underlying structure. Underlying structure is represented in two sub-components, a structural index and the structural elements. Lexical items in a sentence are specified by the structural elements component; their arrangement in surface structure is prescribed by the structural index, i.e., whether the sentence is to be a statement or a question, active or passive, etc. Section III deals with subordinated sentences (relative clauses, gerund phrases, etc.) and provides exercises in sentence analysis and synthesis.

Instructional Procedures

The sentence structure module was presented to three ninth-grade classes at Banks County (Georgia) High School during February, 1973. The exercises were supplementary to regular classroom activities. All work was done under the direction of Mrs. Beatrice Hendricks, ninth-grade English teacher, by students working individually. The following time schedule was prescribed for completion of the exercises: February 1-9, pages 1-9; February 12-16, pages 10-15; February 19-23, pages 16-21; February 26-28, pages 22-24. Two achievement tests were given to measure degree of mastery of the materials, one at the completion of the first 15 pages and the other at the completion of the entire module.

Description of Subjects

Percentile scores for the 66 ninth-graders (34 boys and 32 girls) on ITBS Cognitive Abilities, Verbal, ranged from 3 to 88. The median score was 35, with sixteen students scoring above the fiftieth percentile. Percentage scores on achievement tests ranged from 22 to 90, with 55 as both mean and median score. Fourteen students made a combined score of 70% or better on the achievement tests; thus if 70 is taken as the minimal passing score, approximately one student out of five achieved an acceptable level of mastery of the instructional materials.

Criterion Instrument

The criterion instrument used in the study was the "Perception of Alternate Structures Test," developed and reported by O'Donnell (1973b). This test consists of thirty items of the three-option, multiple-response type and employs nonsense vocabulary to encourage reliance on syntactic rather than

lexical cues. Subjects were directed to indicate the sentence in each item least like the other two sentences in "meaning." The following example is illustrative of the items used (the asterisk indicates the desired response):

a. The birtle scared the ilbid.

b. The ilbid was scared by the birtle.

* c. The ilbid scared the birtle.

Two of the thirty items on the test are intended to measure perception of active-passive alternatives, two indirect object-prepositional phrase options, six relative clause-reduced relative variations (prenominal adjective, participial phrase, and appositive), and two adverbial clause-abridged adverbial alternates. Six items deal with noun clause-infinitive-gerund phrase variations, and the other items deal with various combinations of the constructions listed above.

Item analysis and test reliability data were computed from scores achieved by 87 ninth-graders (including the 66 experimental subjects of the present study) at Banks County High School in November, 1972. Test reliability by Kuder-Richardson Formula 20 was .816. Reliability indices for individual items ranged from .277 to -.062. Item difficulty ranged from .816 to .126, with a mean difficulty of .440. The only claim made for validity of the test is its face validity.

Analysis and Interpretation of Data

Analysis of Data

In November, 1972, the O'Donnell "Perception of Alternate Structures Test" was administered to three ninth-grade and three tenth-grade classes. After

the original plan to divide the ninth-graders into two equal groups was found to be unfeasible, the sentence-structure module was given to the entire ninth grade, and their mastery of the module was measured with two achievement tests. Scores on the achievement tests were combined, and the fourteen ninth-graders who scored 70% or better on these tests were identified as the successful treatment group. The tenth-grade class whose mean score on the structure test was closest to that of the successful treatment group was identified as the reference group.

In March, 1973, immediately after the ninth-graders had completed the module, the structure test was administered again to the entire ninth grade and to the tenth-grade class designated as the reference group. Data obtained from pre- and post-testing are presented in Tables 1 and 2.

Table 1

Data for Performance of Successful Treatment Group and Reference Group on "Perception of Alternate Structures Test"

Group	Number	Pre-Test Mean	S.D.	Post-Test Mean	S.D.
Successful Treatment Group	14	20.00	4.38	23.86	3.70 (t = 5.06*)
Reference Group	17	20.18	4.08	21.18	6.96 (t = 0.76)
		(t = .12)		(t = 1.59)	

*Difference between STG Pre- and Post-Test Means Significant, P < .01

Data presented in Table 1 show that the post-test mean for the successful treatment group is significantly greater ($P < .01$) than their pre-test mean (23.86 as compared to 20.00), but that the post-test means for the treatment and reference groups are not significantly different (23.86 as compared to 21.18). Thus, although the hypothesis of no difference between the successful treatment group and the reference group in respect to post-test mean scores cannot be rejected, the related hypothesis of no difference between pre-test and post-test mean scores for the successful treatment group is rejected.

Table 2

Data for Performance of 66 Ninth-Graders
"Perception of Alternate Structures Test"

Date of Testing	Mean Score	Range of Scores	Standard Deviation
November 1972	13.70	3 - 30	5.73
March 1973	15.83 ($t = 4.84$*)	6 - 30	6.11

*Difference between Pre- and Post-Test Means Significant, $P < .01$.

Pre-test and post-test data for the entire ninth-grade group are presented in Table 2. The mean of 15.83 on the post-test is significantly greater than the mean of 13.70 on the pre-test ($P < .01$). These data provide the basis for rejection of the hypothesis of no difference between the pre-test and post-test scores for the entire treatment group.

The mean score on the structure test for the 62 tenth-graders (32 boys and 30 girls) who took the test in November was 15.15. This mean score is significantly higher than the ninth-grade pre-test mean but not higher than the ninth-grade post-test mean.

Interpretation of Data

Since a disproportionate number of subjects scored low on both the criterion and achievement tests, interpretation of data must be approached with caution. Possible limitations of the criterion and achievement tests must also be kept in mind.

Although the mean gain indicated by the difference between pre- and post-test scores on the criterion instrument is less than impressive, it is statistically significant. Also, the magnitude of gain achieved by the sub-group who showed evidence of learning from the module was noticeably greater than that for the group as a whole. In addition, recognition should be given to the fact that post-test scores for ninth-graders were as high as scores achieved by tenth-graders fifteen weeks before.

When consideration is given to the fact that these modest gains were accomplished after only four weeks of instruction given on a supplementary basis, it seems not unreasonable to expect that less difficult materials of a similar nature taught over a more extended period of time might produce more impressive results.

At any rate, the results of this project support an affirmative answer to one of the questions investigated by O'Donnell and King (1971), i.e., whether sensitivity to syntactic structure can be increased by direct instruction. The extent to which such increased sensitivity to structure can lead to improvement in reading comprehension skills, however, is yet to be adequately demonstrated.

Bibliography

Mellon, John C., 1969. Transformational Sentence-Combining. Research Report No. 10, National Council of Teachers of English: Champaign, Illinois.

O'Donnell, Roy C. and F. J. King, 1971. "An Exploration of Deep Structure Recovery as a Means of Improving Reading Comprehension." Report to the Research Foundation of the National Council of Teachers of English: Urbana, Illinois.

O'Donnell, Roy C., 1973a. "An Instructional Module Designed to Heighten Awareness of Syntactic Structure." Studies in Language Education, Report No. 1, Department of Language Education, The University of Georgia: Athens, Georgia.

O'Donnell, Roy C., 1973b. "A Test of Perception of Syntactic Alternatives." Studies in Language Education, Report No. 2, Department of Language Education, The University of Georgia: Athens, Georgia.

O'Hare, Frank, 1973. Sentence Combining. Research Report No. 15, National Council of Teachers of English: Urbana, Illinois.

Simons, Herbert D., 1970. "The Relationship between Aspects of Linguistic Performance and Reading Comprehension." Doctoral Dissertation, Graduate School of Education, Harvard University: Cambridge, Massachusetts.